

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO. 10/727,197	FILING DATE 12/03/2003	FIRST NAMED INVENTOR R. Bharat Rao	ATTORNEY DOCKET NO. 2002P19745US02
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**AMENDMENTS TO THE CLAIMS**

In the Claims, please make the following amendments:

1. (previously presented) A method for processing medical information, comprising the steps of:
  - obtaining a medical record of a patient, wherein the medical record comprises patient information from structured and unstructured data sources;
  - analyzing with a computer the patient information from at least the unstructured data source in the medical record using domain-specific criteria; and
  - automatically extracting billing information from the medical record as part of the analysis.
2. (original) The method of claim 1, wherein extracting billing information comprises extracting one or more billing codes.
3. (original) The method of claim 2, wherein the billing codes comprise a diagnosis code, a procedure code or both.
4. (original) The method of claim 1, wherein the patient information comprises clinical information and financial information of the patient.
5. (original) The method of claim 1, wherein extracting billing information comprises extracting all billing codes that are supported by the patient information based on all domain-specific criteria in a domain knowledge base.
6. (original) The method of claim 1, wherein the domain-specific criteria comprises institution-specific domain knowledge.
7. (original) The method of claim 6, wherein the institution-specific domain knowledge relates to one or more of data at a hospital, document structures at a hospital, policies of a hospital, guidelines of a hospital, and variations at a hospital.

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8. (original) The method of claim 1, wherein the domain-specific criteria includes condition-specific or disease-specific domain knowledge.

9. (original) The method of claim 8, wherein the condition-specific or disease-specific domain knowledge includes one or more of factors that influence risk of a condition or disease, disease progression information, complications information, outcomes and variables related to a condition or disease, measurements related to a condition or disease, and policies and guidelines established by medical bodies.

10. (original) The method of claim 1, further comprising generating an explanation that includes one or more pointers to relevant patient information, relevant domain-specific criteria, or relevant patient information and domain-specific criteria, which supports the extracted billing information.

11. (original) The method of claim 10, further comprising presenting the explanation to a user for verifying the billing information.

12. (original) The method of claim 1, further comprising automatically generating a medical claim for the patient using the extracted billing information.

13. (original) The method of claim 1, further comprising:  
presenting the extracted billing information to the user for verification; and  
automatically generating a medical claim for the patient using the extracted billing information, if the extracted billing information is verified by the user.

14. (original) The method of claim 13, further comprising:  
modifying the extracted billing information in response to user input, if the billing information is not verified by the user; and  
automatically generating a medical claim for the patient using the modified extracted billing information.

15. (original) The method of claim 1, further comprising automatically updating the medical record of the patient using the extracted billing information.

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16. (original) The method of claim 15, wherein automatically updating the medical record comprises using the extracted billing information to (i) correct billing information in the medical record, which is determined to be incorrectly recorded in the medical record or (ii) insert billing information into the medical record, which is determined to be missing from the medical record.

17. (original) The method of claim 15, further comprising presenting an updated medical record to a user for verification, wherein automatically updating the medical record of the patient is performed in the updated medical record is verified by the user.

18. (original) The method of claim 1, further comprising:

- (a) automatically assessing the quality of the patient information of the medical record using the extracted billing information to obtain quality assessment results; and
- (b) storing the quality assessment results for the medical record.

19. (original) The method of claim 18, further comprising performing steps (a) and (b) for a plurality of medical records in an electronic database; and  
automatically generating quality assurance statistics based on the quality assessment results obtained for the plurality of medical records.

20. (original) The method of claim 18, wherein the quality assessment results comprise information regarding occurrences of correct, incorrect and/or missing billing codes in the medical record.

21. (original) The method of claim 1, further comprising automatically determining an expected amount of medical billing reimbursement based on the extracted billing information.

22. (original) The method of claim 21, further comprising:  
maintaining the expected amount in the medical record; and  
reconciling the expected amount with an actual reimbursement received.

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23. (original) The method of claim 21, wherein determining an expected amount of medical billing reimbursement further depends on whether or not clinical guidelines have been followed as specified by domain-specific criteria.

24. (original) The method of claim 10, wherein the explanation further comprises information as to whether or not clinical guidelines have been followed as specified by domain-specific criteria.

25. (currently amended) A system for processing medical information, comprising:  
an electronic database comprising a knowledge base of comprising domain-specific  
criteria; and

an engine of a device that automatically extracts billing information from a medical record the medical record comprising patient information from structured and unstructured data sources, by analyzing the patient information from at least the unstructured data source using the domain-specific criteria.

26. (original) The system of claim 25, wherein the engine extracts billing information comprising billing codes.

27. (original) The system of claim 26, wherein the billing codes comprise diagnosis codes, procedure codes, or both.

28. (original) The system of claim 25, wherein the engine generates an explanation that includes one or more pointers to relevant patient information, relevant domain-specific criteria, or relevant patient information and domain-specific criteria, which supports the extracted billing information.

29. (original) The system of claim 28, further comprising a user interface for presenting the explanation to a user to enable the user to verify the extracted billing information.

30. (original) The system of claim 26, further comprising an automated billing system that automatically generates a medical claim for the patient using the extracted billing information output from the engine.

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31. (original) The system of claim 30, further comprising a user interface that presents the extracted billing information to a user and enables a user to verify the extracted billing information and modify the extracted billing information before automatically generating a medical claim based on the verified or modified billing information.

32. (original) The system of claim 25, wherein the engine can automatically update the medical record of the patient using the extracted billing information.

33. (original) The system of claim 32, wherein the engine can automatically update the medical record by using the extracted billing information to (i) correct billing information in the medical record, which is determined to be incorrectly recorded in the medical record or (ii) insert billing information into the medical record, which is determined to be missing from the medical record.

34. (original) The system of claim 31, further comprising a user interface that presents an updated medical record to a user and enables the user to verify the updated medical record before automatically updating the medical record of the patient.

35. (original) The system of claim 25, wherein the engine can automatically assess the quality of patient information for each of a plurality of medical records using extracted billing information from each of the medical records and automatically generate quality assurance statistics based on the quality assessment results obtained for the plurality of medical records.

36. (original) The system of claim 35, wherein the quality assessment results comprise information regarding occurrences of correct, incorrect and/or missing billing codes in the medical record.

37. (original) The system of claim 25, wherein the engine can automatically determine an expected amount of medical billing reimbursement based on the extracted billing information from the medical record and reconciles the expected amount with an actual reimbursement received.

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38. (original) The system of claim 25, wherein the system operates as a service by a service provider for processing patient medical records in a database of a subscribing entity.

39. (currently amended) In a ~~A~~ program storage device readable by a machine, tangibly embodying a program of instructions executable on the machine to perform ~~method~~ steps for processing medical information, the program storage device ~~instructions~~ comprising instructions for the steps of:

obtaining a medical record of a patient, wherein the medical record comprises patient information from structured and unstructured data sources;

analyzing the patient information from at least the unstructured data source in the medical record using domain-specific criteria; and

automatically extracting billing information from the medical record as part of the analysis.

40. (original) The program storage device of claim 39, wherein the instructions for extracting billing information comprise instructions for extracting one or more billing codes.

41. (original) The program storage device of claim 39, wherein the patient information comprises clinical information and financial information of the patient.

42. (original) The program storage device of claim 39, wherein the instructions for extracting billing information comprise instructions for extracting all billing codes that are supported by the patient information based on all domain-specific criteria in a domain knowledge base.

43. (previously presented) The method of Claim 1 wherein automatically extracting comprises inferring a diagnosis and the associated billing information from the medical record.

44. (previously presented) The method of Claim 43 wherein inferring comprises inferring the diagnosis and the associated billing information from the medical record without reference to diagnosis codes.

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45. (previously presented) The method of Claim 43 wherein inferring comprises determining a probability.

46. (previously presented) The system of Claim 25 wherein the engine is operable to infer a diagnosis and the associated billing information from the medical record.

47. (previously presented) The system of Claim 46 wherein the engine is operable to infer the diagnosis and the associated billing information from the medical record without reference to diagnosis codes.

48. (previously presented) The system of Claim 46 wherein the engine is operable to determine a probability associated with the inferred diagnosis.

49. (previously presented) The program storage device of Claim 38 wherein automatically extracting comprises inferring a diagnosis and the associated billing information from the medical record.

50. (previously presented) The program storage device of Claim 49 wherein inferring comprises inferring the diagnosis and the associated billing information from the medical record without reference to diagnosis codes.

51. (previously presented) The program storage device of Claim 49 wherein inferring comprises determining a probability.